

**Laura Liptai, Ph.D.**  
**BioMedical Engineering Ph.D. M.S.**  
**Mechanical Engineering B.S.**

**Board Certified Forensic Engineer**

**Engineering and Applied Science**  
**Mechanism and Causation of Trauma**  
**Accident Reconstruction**  
**Impact Biomechanics**

Ph.D. BioMedical Engineering, University of California at Davis  
Mathematical Modeling of Side Impact Head Dynamics 1996

M.S. BioMedical Engineering, University of California at Davis  
Occupant Protection Design Improvement 1993

M.B.A. Engineering Project Mgt, University of Southern California, Robotic  
Motor Usage and Finance 1985

B.S. Mechanical Engineering, University of California at Davis  
National 3<sup>rd</sup> Place Human Powered Vehicle Design 1983

Ergonomics/Human Factors, DIS Royal Academy of Denmark 1981

### **Academic Appointments and Positions**

University of California at Davis BME:  
VSTG Professor 2016-present  
Chair of the Advisory Board 2017-present  
Member of the Advisory Board 2011-present  
LEADR Advisory Committee 2013-present

Anatomy and Histology, School of Medicine 1994  
Mechanical/Machine Design, School of Engineering 1993

### **Honors**

President  
International Board of Forensic Engineering Sciences 2016-present  
Accredited by the Forensic Science Accreditation Board that was formed by  
the American Academy of Forensic Sciences with support from the US  
Department of Justice, the IBFES executes strict criteria culminating in peer  
reviews as well as oral and written examinations for domestic and  
international candidates.

Diplomate, 2005-present, Board of Directors, 2008-present

Past President Society of Forensic Engineers and Scientists, 2015-2016

Elected University of California Davis College of Engineering Innovator,  
2015

National Engineering and Science Hall of Fame Nominee, 2013

Awarded Andrew Payne National Award for Exemplary Contribution in  
Advancing Forensic Engineering Sciences for pioneering new techniques or  
procedures which have widespread acceptance and contribute to the  
advancement of forensic engineering science, 2010

**California**  
San Francisco Bay Area  
925.376.1240

**Florida**  
Orlando  
407.453.8187

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[manager@biomedicalforensics.com](mailto:manager@biomedicalforensics.com)



## Honors continued

Vice Chairman American Society of Testing and Materials Technical Main Committee on Forensic Engineering, E58, 2016-present

“Reference Manual on Scientific Evidence, Third Edition”

National Academy of Sciences Reviewer of the Reference Guide on Engineering

The manual is developed by the National Academy of Sciences (NAS) and the Federal Judicial Center (FJC). The National Academy of Sciences is a society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and their use for the general welfare. Upon the authority of the charter granted by Congress in 1863, the National Academy of Science has a mandate that requires it to advise the federal government on scientific and technical matters. The Federal Judicial Center, established by Congress in 1967 (28 U.S.C. §§ 620-629), is the research and education agency of the federal judicial system responsible for continuing education and training for federal judges, court employees, and others as well as conducting research on behalf of the federal judiciary, 2010

National Engineering Honor Tau Beta Pi

Elected for Distinguished Achievement in Engineering Scholarship, 1995

National Biological Sciences Research Honor Phi Sigma

Awarded by the University of California for Research in the Biological Sciences, 1995

Forensic Science Foundation, Trustee, 2012-elected to 2020 and Treasurer, 2013-2018

Student Affiliate Scholarship Review Chair, 2012-2017 and Think Tank Chair, 2017

Board of Directors American Academy of Forensic Sciences

Worldwide membership of 7000 representing all 50 United States, Canada and 70 other countries, the American Academy of Forensic Sciences is a multi-disciplinary organization that provides leadership to advance science, foster research and encourage international collaboration, 2011-2017

Journal of Forensic Science

Engineering Manuscript Reviewer, 2008-present

## Clinical Experience

Radiology and Neuroradiology, University of California at Davis Medical Center (UCDMC)

Magnetic Resonance Imaging Rotation, 1996

Computerized Tomography Rotation, 1995

Forensic Pathology

Sacramento County, California Coroner's Office, 1993

Santa Clara County, California Coroner's Office, Volunteer, 2002-2003

Orthopedic Trauma UCDMC, 1992

Physical Medicine and Rehabilitation, Spine Injury Clinic UCDMC, 1992

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## International and U.S. Territories

“Autonomous Vehicle Human Factors Control Systems in the United States”  
World Conference and Exhibition on Forensic Science, Kuala Lumpur, **Malaysia**, 2017

International Symposium Australia and New Zealand Forensic Science Society, Auckland, **New Zealand** Attendee, 2016

“Quantification of Occupant Dynamics, Delta V and Acceleration Associated with Vehicle Component Damage in Sideswipe Impact”  
International Society of Biomechanics XXII World Congress, University of Cape Town, **South Africa**, 2009

“Forensic BioMedical Engineering Experimentation and Mathematical Modeling to Analyze Automotive Trauma Causation”  
Encyclopedia of Forensic Science, *John Wiley & Sons*, London, **United Kingdom**, 2009

“Basic Elements in Accident Reconstruction”  
Encyclopedia of Forensic Science, *John Wiley & Sons*, London, **United Kingdom**, 2009

“Forensic Engineering Analysis of Propeller Contact Injury”  
National Academy of Forensic Engineers, Liptai, Kamen, San Juan, **Puerto Rico**, 2008  
Journal of the National Academy of Forensic Engineers 2008

“BioMedical Engineering Analysis of Pedestrian Obstacles and Recovery/Fall Mechanics”  
International Academy of Forensic Sciences, **Hong Kong**, 2005

“Forensic Engineering Analysis of Passenger Vehicle A-Pillar Impact With Tractor-Trailer: Full Scale Crash Tests”  
International Academy of Forensic Sciences, **Hong Kong**, 2005

“Cranial Trauma Quantification on the Basis of Hertzian Contact Theory”  
Invitation by the Turkish Government, published but declined presentation due to Iraqi conflict, **Turkey**, 2003

Chairman European Technical Research Conference, Society of Forensic Engineers and Scientists  
Paris, **France** 2002

## Research, Committees and Publications

Books:

“BioMedical Engineering. Bridging Medicine and Technology, 2<sup>nd</sup> Edition,” W. Mark Saltzman, Cambridge University Press, Contributor 2015

“American Academy of Forensic Sciences Reference Series”  
Twelve Volumes, Series Editor Laura Liptai, 2011 available on Amazon and Amazon EU. Database driven in 2016. The American Academy of Forensic Sciences (AAFS) Reference Series is the largest collection of forensic case studies and research abstracts worldwide spanning eleven fields of forensic science. This first of its kind twelve volume collection contains up to a decade of proceedings from many of the most prominent forensic scientists worldwide. The collection was placed in the National Library of Congress in 2013

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## Research, Committees and Publications *continued*

“Global Thinking and Methodologies in Evidence-Based Forensic Engineering Science” Liptai et al. Forensic Science: Current Issues, Future Directions, Wiley-Blackwell, Wiley & Sons of London, 2013

“Forensic Engineering: BioMedical Edition” National Academy of Forensic Engineers, 2011. Dr. Liptai served on the three member committee responsible for the publication of: Advanced Accident Reconstruction, Civil, Electrical, Mechanical and Legal/Ethical editions.

“Engineering Investigations of Quadriplegic Diving Accidents,” Liptai, Norman and Rowley, AAFS 2017

“Forensic Engineering Analysis of Trauma in a Motorcycle Loss of Control Accident,” Liptai, Ezra, NAEF 2017

“Autonomous Vehicles,” Liptai, AAFS Speaker and Think Tank Chair 2017

“Biomedical Engineering Contributions in the Analysis of Head and Brain Impact with Legal Perspectives by Counsel for the Department of Transportation: Bicycle vs. Auto, Seatbelts, and Motorcycle Accidents,” Liptai, Law, AAFS 2016

Lawrence Livermore National Lab, National Laboratory Entrepreneurship Program, Mentor for Senior Scientists 2016

“On the Leading Edge of Forensic Science,” FSF Think Tank, Liptai Co-chair, 2016

“Forensic Engineering Analysis of Cervical Spine Trauma, Specifically Quadriplegia and Other Paralyzing Injuries from Diving Accidents” Liptai, Rowley  
National Academy of Forensic Engineers, 2016

World Aquatic Health Conference, Invited Speaker  
“Cervical Spine Trauma from Diving Accidents” Liptai, Rowley 2015

Biomedical Engineering Society, Ad Hoc Committee on Professional Licensure 2012-2015

Chairman Interdisciplinary Symposium “International Research: The Forensic Edge”  
Speakers from: the International Commission on Missing Persons, International Red Cross, US Department of Justice, Netherlands Forensic Institute, National Lab Sweden, National Institute of Legal Medicine Portugal, Smithsonian Institution, Canada Border Services Agency and the International Criminal Investigative Training Assistance Program, 2012

“BioMedical Engineering Methodological Protocol for Testing Real World Helmet Performance,” Liptai, 2012

“Current Perspectives on the State of Relevant, Reliable, Valid Forensic Science in a Multidisciplinary Context,” Liptai Interdisciplinary Symposium Speaker, 2011

“Analysis of Cutaneous/Cortical Head, Extremity and Thoracic Trauma Associated with Glass Impact in Automotive, Industrial and Residential/Commercial Building Construction Applications Utilizing the Forensic Engineering Method” AAFS, 2011

## Research, Committees and Publications continued

American Society for Testing and Materials (ASTM) E30, E58 as well as F-13

Organized in 1898, ASTM International is one of the largest voluntary standards developing organizations in the world, representing producers, users, consumers, government and academia from over 100 countries, publishing technical documents that are a basis for manufacturing, management, procurement, codes and regulations.

National Forensic Engineering Task Force. Twelve engineers nationally selected to advise and direct future engineering standards.

Vice Chair Technical Main Committee on Forensic Engineering, E58 2009-present member, Chair 2016-present

Editor, Standard Guide for the Practice of Forensic Engineering, 2008-2009

BioMedical Engineering Chair, E-30 Technical Standard Guides and Practices, Member 2003-2008, Chair 2004

“Forensic Engineering Analysis of Golf Course, Golf Related Trauma”

National Academy of Forensic Engineers, 2011

Journal of the National Academy of Forensic Engineers projected, 2011-2012

“Forensic Engineering and the Scientific Method”

National Academy of Forensic Engineers, 2010

Journal of the National Academy of Forensic Engineers, 2010

“Biomedical/Biomechanical Analysis of Injury/Trauma Reported for Restrained and Un-Restrained Adult and Pediatric Occupants Involved in Vehicular Rollover Crashes: A Nominal and Statistical Approach” AAFS, 2010

BioMedical Engineering/Biomechanics Track Chairman, AAFS, Engineering Sciences Section, 2010

“Forensic Engineering Analysis of Industrial and Heavy Equipment Trauma Causation”

American Academy of Forensic Sciences YSYF, 2009

Accident Reconstruction Committee Correspondent, National Academy of Forensic Engineers, 2009

International Symposium on Peer Reviewing, American Academy of Forensic Sciences Engineering Sciences Representative, 2009

Crash Injury Research and Engineering Network (CIREN), Crash Database Input Review  
University of Michigan Research Guest, 2008

“Hydrodynamic and BioMedical Engineering Factors in Propeller Contact Injury” AAFS, 2008

Forensic Engineering Practice Committee, Guidelines for the P.E. as a Forensic Engineer  
National Academy of Forensic Engineers, 2007-2008

“Forensic BioMedical Engineering Experimentation and Modeling”

National Academy of Forensic Engineers Speaker, 2007

Journal of the National Academy of Forensic Engineers, 2007

Scientific Program Chairman, Head and Brain Trauma Interdisciplinary Symposium

“BioMedical Engineering Perspective of Head and Brain Trauma” AAFS, 2007

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## Research, Committees and Publications continued

“Forensic Engineering Analysis of Passenger Vehicle A-Pillar Impact with Tractor-Trailer: Theoretical Approach and Full Scale Crash Tests,” Liptai, AAFS, 2006

“Variations in Evidentiary Standards and Engineering Standards Analysis” with Joe S. Cecil, Ph.D., J.D., Judicial Research Council, 2006

“Biomedical Engineering Analysis of Brain Injury,” American Academy of Psychiatry and the Law, 2006

“Forensic Engineering Analysis of Pedestrian Trauma Using BioMedical and Accident Reconstruction Methods”  
National Academy of Forensic Engineers Co-Speaker, 2006  
Journal of the National Academy of Forensic Engineers, 2006

“Forensic Engineering Science, the Application of Applied Scientific Principles to the Investigation, Analysis and Reconstruction of Physical Events” AAFS YFSF, 2006

Chairman of Engineering Sciences Section, American Academy of Forensic Science, including: mechanical, electrical, civil, biomedical, materials, environmental and physics, 2005-2006

“Forensic Engineering Analysis of Head Impacts within a Vehicle Subject to Side Impact”  
National Academy of Forensic Engineers Speaker, 2005  
Journal of the National Academy of Engineers, 2005

Continuing Education/Membership Committee, American Academy of Forensic Sciences, 2005-2006

“Tutorial and Panel on Engineering Evidence and Lay Testimony” AAFS, 2005

American Academy of Forensic Sciences, Engineering Section, Awards Committee 2000-2002, 2003-2004; Ethics Chairman 2004-2005

“Decoupling of Lagrangian Equations of Motion to Improve Computational Efficiency and Application to Multi-Body Constrained BioMedical Engineering Systems” AAFS, 2004

“Head Impact by Golf Ball: Digital Data Acquisition and Analysis Compared to Alternative Methodologies,” AAFS, 2004

“Accident Reconstruction of 14-Passenger Catastrophic Rollover and Analysis of How Occupant Restraints Could Have Prevented Five Fatalities and Four Serious/Severe Traumas Including Analysis of Pediatric Restraint Usage,” Liptai, AAFS Author/Speaker, 2004

“BioMedical Engineering: Physical Evidence as the Silent Witness,” AAFS-SA, 2004

“Accident Reconstruction of 14-Passenger Catastrophic Rollover and Analysis of How Occupant Restraints Could Have Prevented Five Fatalities and Four Serious/Sever Traumas Including Analysis of Pediatric Restraint Usage,” Liptai, et al., AAFS, 2004

Technical Program BioMedical Engineering Tract Chairman, AAFS, 2004

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## Research, Committees and Publications continued

“Experimental Analysis of Pediatric Brain Injury Causation Utilizing Scientifically Proven Quantitative Measures”  
International Mechanical Engineering Congress & Exposition Co-Author, 2004

Faculty, Student Section American Academy of Forensic Sciences

An international, multi-disciplinary faculty that provides leadership and mentoring to aspiring forensic scientists with the objective of promoting education in forensic science.

2011 Chicago, IL

2010 Seattle, WA

2009 Denver, CO

2008 Washington, D.C.

2007 San Antonio, TX

2006 Seattle, WA

2005 New Orleans, LA

2004 Dallas, TX

2003 Chicago, IL

“Orthopedic Implant Failure: Analysis of Internal Fixation Failure of a Three-Dimensional Joint” AAFS, 2000

“BioMedical Assessment of Rollover Collisions”

Society of Automotive Engineers Topical Technical Workshop (TOPTEC), 1999

American Back Society, Clinical Committee, Neurological Diseases and Injuries, 1998

“Analysis of Flying Harness System” AAFS, 1998

Co-Established Trauma Research Group, University of California at Davis Medical Center, 1996

Human Biomechanics & Simulation Standards Committee, Society of Automotive Engineers, 1996

Chairman of Technical Program: Annual Articulated Total Body User’s Group

Hosted conference with Wright Patterson Air Force personnel, February 1996

Articulated Total Body Model User’s Group Executive Committee 1995-1996

Full Scale Automotive Crash Testing at CalTrans Highway Patrol High Speed Test Track, CalTrans Materials, Engineering and Testing Services Volunteer, Structural Materials Branch, 1992-1996

Mathematical Modeling & Human Body Simulation, Research Guest, Armstrong Laboratories

Wright Patterson Air Force Base, 1995

“The Relationship Between Mass and Acceleration for Impacts on Padded Surfaces”

Biomechanical differences of varied surface properties in the prevention of head injury in adults and children.

Journal of Biomechanics, Co-Author 1994

Ford Motor Company Side Air Bag Full-Scale Sled Cadaver Testing

Wayne State University, Bioengineering Center, 1994

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## Seminars, Symposia and Lectures

“Aquatic Trauma: Proper Interpretation of Physical Evidence from Watercraft”  
Society of Forensic Engineers and Scientists, 2008

“Probability Quantification of Diffuse Trauma to the Brain and Multidisciplinary Analysis of Industrial Loader Fatalities”  
Society of Forensic Engineers and Scientists, 2006

“BioMedical Engineering Analysis of Brain Injury”  
Registered Nurse Education, 2006

“Non-Impact Head Injuries”  
Society of Forensic Engineers and Scientists, 2005

“Trauma Causation of a Survivable Open Book Fracture/Crush to the Pelvis”  
Society of Forensic Engineers and Scientists, 2003

“Brain Protection in Helmet Analysis,” and “Causal Assessment of Slip and Fall Trauma”  
Sacramento Area Chapter of Nurses, 2003

“Technical Analyses and Report Writing”  
Society of Forensic Engineers and Scientists, 2003

“Etiology of Peripheral Neuropathies”  
Society of Forensic Engineers and Scientists, 2000

“Causation of Lumbar Spine Pathology”  
Society of Forensic Engineers and Scientists, 2000

“Brain Injury Etiology”  
Northern California Fraud Investigators Association Conference, 2000

“Brain Injury Biomechanics”  
“Crash Testing with Dummies”  
Northern California Trauma Conference for trauma surgeons and other health care providers, 1999

“Head Trauma”  
Northern California Trauma Conference for trauma surgeons and other health care providers, 1998

“Biomechanics of Side Impact Trauma”  
Society of Forensic Engineers & Scientists Author/Speaker, 1997

“Head Trauma and Brain Injury”  
Forensic Pathology Department, Sacramento County Coroner’s Office Lecturer, 1993

Occupant Restraint Technology and Injury Assessment Testing with the Hybrid III Dummy  
University of California, Davis, CA 1992-1993



## BioMedical and Mechanical Consulting Experience

BioMedical Forensics

Engineering and Scientific Consulting, BioMedical and Mechanical Applied Science

Mechanism & Causation of Injury, Impact Biomechanics, Accident Reconstruction 2003-present

L.L. Liptai BioMedical Engineering

BioMedical and Mechanical Applied Science, Product Liability and Accident Reconstruction, 1996-2003

Technical Consultant with Anatomist Lawrence M. Elson, Ph.D.

Injury Causation, Mechanics of Injury, BioMedical Engineering, Anatomical Basis of Medicine/Surgery, 1996-1998

Liptai Engineering

BioMedical and Mechanical Applied Science, Accident Reconstruction, Product Liability, 1983-1996

Bechtel Control Systems, Engineering Intern, 1982-1983

## Professional Associations Past and Present

Advanced Highway Maintenance Construction Technology Research via doctoral research advisor, 1995-1997

American Academy of Forensic Sciences

American Back Society

American Society of Mechanical Engineers

American Society of Safety Engineers

American Society of Testing and Materials

Articulated Total Body User's Group

Association for the Advancement of Automotive Medicine

Human Factors and Ergonomics Society

International Board of Forensic Engineering Sciences

Society of Automotive Engineers

Society of Forensic Engineers and Scientists

Tau Beta Pi ~ National Engineering Honor Society

UCD Medical Center Orthopedic Research via qualifying committee faculty/research group director, 1995-1996

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## Continuing Education and Professional Development

Workshop on the multifactorial Analysis of Slip and Fall Events: Implications for Forensics and Safety Professionals, ASTM International Headquarters, 2017

Assessing Walkway Safety per ASTM F2948-13 Standard Guide for Walkway Auditor Qualifications, University of North Texas College of Engineering, 2016

Walkway Auditor Training Course: ASTM F29-48, Forcon International, 2015

English XL Certification

Application of Engineering in the Jurisprudence System, National Academy of Forensic Engineers, 2015

Segway Dynamic Stabilization and Inertial Sensing Controls Research, 2010

Occupant and Vehicle Kinematics in Rollovers Professional Development Program  
Society of Automotive Engineers, Detroit, MI 2008

Certification: Boating Course Approved by the National Association of State Boating Law Administration and Recognized by the United States Coast Guard Auxiliary, 2008

Certification: Motorcycle Training Approved by the Commissioner of the California Highway Patrol, 2007

All Terrain Vehicle Safety Institute, 2007

Crash Data Retrieval Specialist Certification  
Vetronix Crash Data Retrieval (CDR) System, 2003

Occupant Protection Emerging Topics and Technologies (TOPTEC), 1998

Side Impact Design Considerations for Safer Vehicles  
Society of Automotive Engineers, 1998

Diagnosis & Treatment of Neck and Back Pain: Integrated Approach  
Stanford University School of Medicine and American Back Society, 1997

Armed Forces Institute of Pathology: Basic Forensic Pathology  
Department of the Army, Center for Advanced Medical Education, 1997

High Speed Rear Impact  
Society of Automotive Engineers, 1997

Airbag Design & Performance  
Society of Automotive Engineers, 1997

Biomechanics of Impact Trauma  
Associated for the Advancement of Automotive Medicine, 1996

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**Continuing Education and Professional Development** continued

The Biomechanics of Impact and Its Relationship to Crash Performance Standards, 1996

Articulated Total Body Model Colloquium, 1995, 1996

Injuries, Anatomy, Biomechanics & Federal Regulations, 1995

Rear Impact Collision Topics and Technologies (TOPTec), 1994

Head and Neck Injury Symposium, 1994

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NOT RETAINED

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